Goal 5:
Zero Hazardous Air Pollutant Emissions
Five-Year Plan

Zero Hazardous Air Pollutant Emissions

The total weight of hazardous air pollutant emissions is reduced to zero.

The long-term goal for this Five-Year Plan is to ensure that Hazardous Air Pollutant (HAP) emissions are reduced to zero by 2027. Desired end states include cleaner air for everyone in the community, better working conditions for those at Fort Carson, and a healthier regional environment.

Background

The original goal from the Sept 2002 sustainability conference related to hazardous air pollutants (HAPs) was:

Zero Waste Disposal

Analysis of the HAP emission portion of the Zero Waste Goal revealed that reduction of HAP emissions would require a complicated and more extensive than expected list of initiatives. Thus the HAP portion was removed and set up as a stand alone goal.

Desired end states related to HAPs formulated at the Sept 2002 conference are as follows:

- Total weight of HAP emissions reduced 50% by 2010.
- Total weight of HAP emissions reduced 100% by 2027.
- Decrease in the use of hazardous materials that create HAPs.
- Coordination between local organizations to encourage recycling and reuse.
- Cost analyses take total environmental and social costs into consideration.
- Product life-cycle costs are shared from user to producer.
- Better influence what suppliers provide to increase shelf-lives and decrease hazardous content.

Initiatives were developed through collaborations with Fort Carson personnel in charge of tracking and reducing air pollution.

The Natural Step System Conditions

1. Nature is not subject to systematically increasing concentrations of substances extracted from the earth's crust.

2. Nature is not subject to systematically increasing concentrations of substances produced by society.

3. Nature is not subject to increasing degradation by physical means.

4. Human needs are met worldwide.

The Zero HAP emissions goal aligns primarily with TNS system conditions two, three and four. Certain HAP emissions cause acid rain and other detrimental effects in the environment. Concentrating these pollutants violates system condition two, which also degrades nature by physical means (system condition three). HAP emissions are also bad for humans; thus preventing them supports system condition four.

Challenges and Barriers

- Inflexible maintenance specifications; alternative processes are slow to be approved
- The DOD does not exert enough influence on what suppliers provide
- There is a perception that alternative products perform poorly
- Government agencies are not coordinating on sustainability issues

Strategies

- Switch to low-emission, HAP-free paint and other products
- Install Stage II Vapor Recovery Systems in Gas Stations
- Analyze painting methods and use of equipment
- Form a team to analyze, plan and implement programs to reduce HAPs even further

Areas of Overlap

- Awareness, education and training
- Partnering
- Procurement
- Zero Waste

Objectives, Initiatives, Steps and Resources

Objective 5.1*:* Reduce Hazardous Air Pollutants (HAPs) by 60% over the next 5 years.

Fort Carson is very close to becoming a major source of HAPS. The designation of "major source" can place increased demands on budget and personnel resources, including:

- Stringent, time-consuming monitoring, record keeping, and reporting requirements.
- More rigorous and expensive design standards for any new sources of HAPs.
- Decreased operational flexibility and increased permitting times that can affect mission related construction projects.
- Retrofitting or replacement of existing equipment that are sources of HAPs.
- Degraded public perception of Fort Carson.

It is important to note that, under the Clean Air Act, an Installation designated as a major source of HAPs must continue meeting the requirements of a major source in perpetuity. Now is the critical time to ensure this designation does not occur, as meeting the requirements of a major HAP source designation will cause a decrease in operational flexibility, an increase in reporting requirements, and an increased potential for compliance issues.

Initiative 5.1.1: Switch to low-emission, HAP-free Chemical Agent Resistant Coatings (CARC) to paint vehicles in Building 8000 paint booths by 2004.

Lead: DOL
Action Agent: ITT

In calendar year 2001, Building 8000 paint booths emitted more than 7,200 pounds of HAPs. A lower emission HAP-free Chemical Agent Resistant Coating (CARC) is available to use on Army vehicles. In addition to releasing fewer emissions, the use of lower emission, HAP-free CARC paint would have auxiliary benefits as it would decrease the use of other hazardous materials used in cleaning solvents, decrease annual emission fees, create less hazardous waste to report in the Toxic Release Inventory, and create a healthier working environment for painters and support personnel. The decreased use of other hazardous materials will support the overall goal of zero waste.

This goal should be implemented in one year instead of five. Waiting even one year may jeopardize the Installation's HAP designation. This initiative alone will create a 31% reduction, which is over one-half of the overall goal of 60% reduction.

Steps	Resources Needed	Time/Cost
DECAM submit memo to DOL and ITT for switching to lower-emission, HAP-free CARC paint.		
Gather information from other installations who have made the switch (sample BPA, etc.)		
DOL request ITT to make switch.		
Order product		
Clean out old product		
Train workers and install new product.		

Measure: Percent reduction in HAPs from Building 8000 by 2004.

Initiative 5.1.2: Install Stage II Vapor Recovery Systems in Army and Air Force Exchange Service (AAFES) Gas Stations by 2005.

Lead: AAFES

Action Agent: AAFES

The three AAFES gasoline refueling stations at Fort Carson emit approximately 5780 pounds of HAPs per year, through vapors that escape during the refueling of privately owned vehicles. By installing this type of pollution control technology, emissions would be reduced annually by 1,100 pounds of HAPs. Reducing these emissions will allow the Installation to realize a five percent reduction in overall HAPs toward the five-year target of a 60% reduction. While five percent may not seem like much, the benefits of vapor recovery include the reduction of 2,200 pounds of total emissions (including Volatile Organic Compounds), which will reduce yearly emissions fees.

In 2002, another refueling station was built at Fort Carson. HAP emissions from that station will need to be reduced as well. While the baseline data only includes data up to 2001, cost estimates include installing vapor recovery systems at the extra fueling station as well.

Steps	Resources Needed	Time/Cost
Prepare installation plan.		
Order Stage II Vapor Recovery Systems for all gasoline stations.		
Install Stage II Vapor Recovery Systems		

Measure: Percent reduction in HAPs at each refueling station by 2005.

Initiative 5.1.3: Analyze painting methods and use of equipment to ensure maximum transfer efficiency in Building 8000 paint booths by 2005.

Lead: DOL

Action Agent: ITT

Minimizing HAP emissions will require implementation of technology and substitute materials, as well as business practice changes. An analysis of equipment configuration and use may lead to the reduction of HAPs in painting operations by decreasing overspray. Better painting practices might minimize paint use, minimize emissions, and therefore improve indoor working conditions for spray painters and other personnel working in the area, as well as potentially decrease costs in the long-run by using less paint. This initiative requires the hiring of a consultant to visit Fort Carson and analyze the airflow rates in both paint booths and observe the use of the high volume-low pressure paint guns to ensure they are calibrated and used correctly. This analysis was performed at Fort Hood with much success.

Steps	Resources Needed	Time/Cost
Write Performance Work Statement/Statement of Work		
Analyze proposals		
Award Contract		
Perform Review of Painting Activities		
Train painters to new methods.		
Implement new painting procedures		

Measure: Percent reduction in paint used that generates HAPs by 2006.

Initiative 5.1.4: Analyze, plan and implement programs to reduce HAPs even further.

Lead: DECAM

Action Agents: DOL, DPW, AAFES, tenants, and all process owners that create HAPs

Other sources of HAPs at Fort Carson include from "categorically exempt" standard configuration boilers, miscellaneous chemical use, open burn/open detonation, landfills, dynamometers, storage tanks, equipment leaks, aviation ground power units (AGPUs), Industrial Wastewater Treatment Plant (IWTP), sewage treatment plant, and x-rays. The total HAP emissions from all of these sources equal approximately 13,500 pounds per year.

Analysis of ways to minimize HAPs from these sources should begin as soon as possible. Technologies may not currently exist to alleviate HAPs from all minor sources; however, by keeping them on the radar screen, solutions may be found in the future.

Overall, better business/shop practices, new technologies, and different products and materials are methods to be explored to help minimize HAPs, and it will take process owners and external businesses to support further HAP reductions. Area businesses will need to share their best practices with Fort Carson and partner with the Installation to develop technologies. Other area DOD installations will be needed to help make the development of new technologies more attractive by offering a larger market. Ultimately, process managers, tenants, and units will all need to commit to changing practices, equipment, and products if the Installation's goal of zero HAPs is to be a success.

Steps	Resources Needed	Time/Cost
Determine team membership.		
Analyze all sources of HAPs and acquire explanation of needs and technologies.		
Analyze and research ways to reduce HAPs from those sources		
Prioritize initiatives		
Implement initiatives		

Measure: Percent reduction in HAPs from miscellaneous sources by 2005.

Goal 5 - Zero Hazardous Air Pollutant Emissions: The total weight of hazardous air pollutant emissions is reduced to zero.

Objective 5.1.: Reduce hazardous air pollutant emissions from Fort Carson by 60% over the next 5 years.